UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/685,739	10/14/2003	Dean J. Larson	LAM1P167X2/P1066X	6129

58766 7590 03/04/2009
Beyer Law Group LLP
P.O. BOX 1687
Cupertino, CA 95015-1687

EXAMINER	
ZERVIGON, RUDY	
ART UNIT	PAPER NUMBER
1792	
MAIL DATE	DELIVERY MODE
03/04/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/685,739	**Applicant(s)** LARSON ET AL.
	Examiner Rudy Zervigon	**Art Unit** 1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 23 December 2008.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9 and 13-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 13-20* is/are rejected.

7)☒ Claim(s) *13* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date *12/23/2008*.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114 was filed in this application after a decision by the Board of Patent Appeals and Interferences, but before the filing of a Notice of Appeal to the Court of Appeals for the Federal Circuit or the commencement of a civil action. Since this application is eligible for continued examination under 37 CFR 1.114 and the fee set forth in 37 CFR 1.17(e) has been timely paid, the appeal has been withdrawn pursuant to 37 CFR 1.114 and prosecution in this application has been reopened pursuant to 37 CFR 1.114. Applicant's submission filed on December 23, 2008 has been entered.

Response to Affidavit

2. The declaration under 37 CFR 1.132 filed December 23, 2008 is insufficient to overcome the rejection of claims 1-9 and 13-20 based upon anticipation under Motoda; Takashi et al. (US 5,496,408 A) *as set forth in the last Office action* because:

3. It refers only to the system described in the above referenced application and not to the individual claims of the application. Thus, there is no showing that the objective evidence of nonobviousness is commensurate in scope with the claims. See MPEP § 716.

Claim Objections

4. Claim 13 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim, or amend the claim to place the claim in proper dependent form, or rewrite the claim in independent form. Claim 13 depends from cancelled claim 12. It is assumed claim 13 depends from claim 1.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 1-7, 9, 15, 17, 19, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motoda; Takashi et al. (US 5,496,408 A) in view of Shinozuka; Shyuhei et al. (US 6,315,858 B1). Motoda teaches an apparatus (Figure 7; column 10, line 23 - column 11, line 47) for providing a gas ("impurity gas" on 43a; Figure 7) from a gas supply ("impurity gas" on 43a; Figure 7) to at least two different zones (28, 50a-c, 46a-c; Figure 7; column 10, line 23 - column 11, line 47) in a process chamber (3; Figure 7), comprising: a flow divider (" T " near 43a; Figure 7) for providing a fluid connection to the gas supply ("impurity gas" on 43a; Figure 7), wherein the flow divider (" T " near 43a; Figure 7) splits gas ("impurity gas" on 43a; Figure 7) flow from the gas supply ("impurity gas" on 43a; Figure 7) into a plurality of legs (immediate upstream of " T " near 43a; Figure 7); a master leg (connecting 43a and 44; Figure 7) in fluid connection with the flow divider (" T " near 43a; Figure 7), wherein the master leg (connecting 43a and 44; Figure 7) comprises a master fixed orifice[1] (inherent, all piping have "orifice"; Compare with Applicant's Figure 19); and a first slave leg (connecting 43a and 50a; Figure 7) in fluid connection with the flow divider (" T " near 43a; Figure 7) and in parallel with the master leg (connecting 43a and 44; Figure 7), wherein the first slave leg (connecting 43a and 50a; Figure 7) comprises: a first slave leg (connecting 43a and 50a; Figure 7) valve (29); and a first slave leg (connecting 43a and 50a; Figure 7) fixed orifice (inherent, all piping have "orifice"; Compare with Applicant's Figure 19) - claim 1.

Motoda further teaches:

i. The apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 1, further comprising: a second slave leg (connecting 43a and 50b; Figure 7) in fluid connection with the flow divider (" T " near 43a; Figure 7) and in parallel with the master leg (connecting 43a and 44; Figure 7) and the first slave leg (connecting 43a and 50a; Figure 7), wherein the second slave leg (connecting 43a and 50b; Figure 7) comprises: a second slave leg (connecting 43a and 50b; Figure 7) valve (29); and a second slave leg (connecting 43a and 50b; Figure 7) fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 2

ii. The apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 2, further comprising: a third slave leg (connecting 43a and 50c; Figure 7) in fluid connection with the flow divider (" T " near 43a; Figure 7) and in parallel with the master leg (connecting 43a and 44; Figure 7), the first slave leg (connecting 43a and 50a; Figure 7), and the second slave leg (connecting 43a and 50b; Figure 7), wherein the third slave leg (connecting 43a and 50c; Figure 7) comprises: a third slave leg (connecting 43a and 50c; Figure 7) valve (29); and a third slave leg (connecting 43a and 50c; Figure 7) fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 3

iii. A semiconductor chip formed using the apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 1, as claimed by claim 17 – Applicant's "A semiconductor chip formed using the apparatus" is a recitation of intended use. Further, it

---

[1] Orifice ***n*** – an opening though which something may pass. Merriam-Webster's Collegiate Dictionary - 10th Ed.

has been held that claim language that simply specifies an intended use or field of use for the invention generally will not limit the scope of a claim (Walter , 618 F.2d at 769, 205 USPQ at 409; MPEP 2106). Additionally, in apparatus claims, intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim (In re Casey,152 USPQ 235 (CCPA 1967); In re Otto , 136 USPQ 458, 459 (CCPA 1963); MPEP2111.02).

iv. The apparatus, as recited in claim 18, further comprising a joining manifold (28; Figure 7) for combining output from the first slave leg (connecting 43a and 50a; Figure 7), the second slave leg (connecting 43a and 50b; Figure 7), and the third slave leg (connecting 43a and 50c; Figure 7) connected between the first slave leg (connecting 43a and 50a; Figure 7), the second slave leg (connecting 43a and 50b; Figure 7), and the third slave leg (connecting 43a and 50c; Figure 7) and a zone (28; Figure 7) of the at least two zones (28, 50a-c, 46a-c; Figure 7; column 10, line 23 - column 11, line 47) of the process chamber (3; Figure 7), as claimed by claim 19

v. The apparatus, as recied in claim 3, futher comprising a joining manifold (28; Figure 7) for combining output from the first slave leg (connecting 43a and 50a; Figure 7), second slave leg (connecting 43a and 50b; Figure 7), and the third slave leg (connecting 43a and 50c; Figure 7) connected between the first slave leg (connecting 43a and 50a; Figure 7), second slave leg (connecting 43a and 50b; Figure 7), and the third slave leg (connecting

43a and 50c; Figure 7) and a zone (28; Figure 7) of a process chamber (3; Figure 7), as claimed by claim 20

Motoda does not teach:

i. wherein the master fixed orifice[2] (inherent, all piping have "orifice"; Compare with Applicant's Figure 19) is a flat plate fixed orifice – claim 1

ii. wherein the first slave leg (connecting 43a and 50a; Figure 7) fixed orifice (inherent, all piping have "orifice"; Compare with Applicant's Figure 19) is a flat plate fixed orifice – claim 1

iii. Motoda's apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 3, further comprising: a fourth slave leg in fluid connection with Motoda's flow divider (" T " near 43a; Figure 7) and in parallel with Motoda's master leg (connecting 43a and 44; Figure 7), Motoda's first slave leg (connecting 43a and 50a; Figure 7), Motoda's second slave leg (connecting 43a and 50b; Figure 7), and Motoda's third slave leg (connecting 43a and 50c; Figure 7), wherein the fourth slave leg comprises: a fourth slave leg valve; and a fourth slave leg fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19); and a fifth slave leg in fluid connection with Motoda's flow divider (" T " near 43a; Figure 7) and in parallel with Motoda's master leg (connecting 43a and 44; Figure 7), Motoda's first slave leg (connecting 43a and 50a; Figure 7), Motoda's second slave leg (connecting 43a and 50b; Figure 7), Motoda's third slave leg (connecting 43a and 50c; Figure 7), and The fourth slave leg, wherein The fifth slave leg comprises: a fifth slave leg valve; and a fifth slave leg fixed orifice (inherent, all piping have “orifice”; see Footnote 1; Compare with Applicant’s Figure 19), as claimed by claim 4

iv. Motoda’s apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 4, further comprising a tuning gas system in fluid connection with at least one of Motoda’s master leg (connecting 43a and 44; Figure 7), first slave leg (connecting 43a and 50a; Figure 7), second slave leg (connecting 43a and 50b; Figure 7), third slave leg (connecting 43a and 50c; Figure 7), fourth slave leg, and fifth slave leg, as claimed by claim 5

v. Motoda’s apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 5, wherein The tuning gas system comprises: at least one tuning gas source; and at least one mass flow controller, as claimed by claim 6

vi. Motoda’s apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 6, wherein The tuning gas system is in fluid connection with Motoda’s master leg (connecting 43a and 44; Figure 7) down stream from Motoda’s master fixed orifice (inherent, all piping have “orifice”; see Footnote 1; Compare with Applicant’s Figure 19), as claimd by claim 7

vii. Motoda’s apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 8, wherein the first, second, third, fourth, and fifth leg fixed orifices (inherent, all piping have “orifice”; see Footnote 1; Compare with Applicant’s Figure 19) are flat plate fixed orifices, as claimed by claim 9

---

[2] Orifice ***n*** – an opening though which something may pass. Merriam-Webster’s Collegiate Dictionary - 10th Ed. p.820

viii. Motoda's apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 1, wherein Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19) and Motoda's first leg fixed orifices (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19) are flat plate fixed orifices, as claimed by claim 15

Shinozuka teaches a process gas delivery apparatus (Figure 5; column 4; lines 51-58) including an equivalent flat plate fixed orifice (39; Figure 5, 6) and a tuning gas system (column 4; lines 51-58) including mass flow controllers (43, 49; Figure 2) for process gas delivery and control.

It would have been obvious to one of ordinary skill in that art at the time the invention was made for Motoda to add Shinozuka's equivalent flat plate fixed orifice (39; Figure 5, 6) and tuning gas system (column 4; lines 51-58) including mass flow controllers (43, 49; Figure 2) for process gas delivery and control, inclusive, for Motoda to reproduce his slave leg apparatus parts.

Motivation for Motoda to add Shinozuka's equivalent flat plate fixed orifice (39; Figure 5, 6) and tuning gas system (column 4; lines 51-58) including mass flow controllers (43, 49; Figure 2) is for process gas delivery and control resulting in area-specific substrate processing as taught by Shinozuka (column 1, line 64 – column 2, line 8). Further, it is well established that the duplication of parts is obvious (In re Harza , 274 F.2d 669, 124 USPQ 378 (CCPA 1960) MPEP 2144.04).

7. Claims 8, 11, 13, 14, 17, and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Motoda; Takashi et al. (US 5,496,408 A) and Shinozuka; Shyuhei et al. (US 6,315,858 B1) in view of Ohmi; Tadahiro et al. (US 5,313,982 A). Motoda and Shinozuka are discussed above. Motoda and Shinozuka do not teach Motoda's apparatus (Figure 7; column 10,

line 23 - column 11, line 47), as recited in claim 7, further comprising a zone selection device connected to Motoda's master leg (connecting 43a and 44; Figure 7) down stream from Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 8

Motoda and Shinozuka do not teach:

i. Motoda's apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 12, further comprising a zone selection device connected to Motoda's master leg (connecting 43a and 44; Figure 7) down stream from Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 13

ii. Motoda's apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 3, further comprising a zone selection device connected to Motoda's master leg (connecting 43a and 44; Figure 7) down stream from Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 14

iii. Motoda's apparatus (Figure 7; column 10, line 23 - column 11, line 47), as recited in claim 15, further comprising a zone selection device connected to Motoda's master leg (connecting 43a and 44; Figure 7) down stream from Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 17

iv. An apparatus (Figure 7; column 10, line 23 - column 11, line 47) for providing a gas ("impurity gas" on 43a; Figure 7) from a gas supply ("impurity gas" on 43a; Figure 7) to at least two different zones (28, 50a-c, 46a-c; Figure 7; column 10, line 23 - column 11, line 47) in a process chamber (3; Figure 7), comprising: a flow divider (“ T “ near 43a; Figure 7) for providing a fluid connection to Motoda’s gas supply (“impurity gas” on 43a; Figure 7), wherein Motoda’s flow divider (“ T “ near 43a; Figure 7) splits gas (“impurity gas” on 43a; Figure 7) flow from Motoda’s gas supply (“impurity gas” on 43a; Figure 7) into a plurality of legs (immediate upstream of “ T “ near 43a; Figure 7); a master leg (connecting 43a and 44; Figure 7) in fluid connection with Motoda’s flow divider (“ T “ near 43a; Figure 7), wherein Motoda’s master leg (connecting 43a and 44; Figure 7) comprises a flat plate fixed orifice (inherent, all piping have “orifice”; see Footnote 1; Compare with Applicant’s Figure 19); a first slave leg (connecting 43a and 50a; Figure 7) in fluid connection with Motoda’s flow divider (“ T “ near 43a; Figure 7) and in parallel with Motoda’s master leg (connecting 43a and 44; Figure 7), wherein Motoda’s first slave leg (connecting 43a and 50a; Figure 7) comprises: a first slave leg (connecting 43a and 50a; Figure 7) valve (29); and a first slave leg (connecting 43a and 50a; Figure 7) flat plate fixed orifice (inherent, all piping have “orifice”; see Footnote 1; Compare with Applicant’s Figure 19); a second slave leg (connecting 43a and 50b; Figure 7) in fluid connection with Motoda’s flow divider (“ T “ near 43a; Figure 7) and in parallel with Motoda’s master leg (connecting 43a and 44; Figure 7) and Motoda’s first slave leg (connecting 43a and 50a; Figure 7), wherein Motoda’s second slave leg (connecting 43a and 50b; Figure 7) comprises: a second slave leg (connecting 43a and 50b; Figure 7) valve (29); and a second slave leg (connecting 43a and 50b; Figure 7) flat plate fixed orifice (inherent, all piping have “orifice”; see Footnote 1; Compare with

Applicant's Figure 19); a third slave leg (connecting 43a and 50c; Figure 7) in fluid connection with Motoda's flow divider (" T " near 43a; Figure 7) and in parallel with Motoda's master leg (connecting 43a and 44; Figure 7), Motoda's first slave leg (connecting 43a and 50a; Figure 7), and Motoda's second slave leg (connecting 43a and 50b; Figure 7), wherein Motoda's third slave leg (connecting 43a and 50c; Figure 7) comprises: a third slave leg (connecting 43a and 50c; Figure 7) valve (29); and a third slave leg (connecting 43a and 50c; Figure 7) flat plate fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19); a tuning gas system in fluid connection with at least one of Motoda's master leg (connecting 43a and 44; Figure 7), first slave leg (connecting 43a and 50a; Figure 7), second slave leg (connecting 43a and 50b; Figure 7), and third slave leg (connecting 43a and 50c; Figure 7), wherein The tuning gas system comprises: at least one tuning gas source; and at least one mass flow controller; and a zone selection device connected to Motoda's master leg (connecting 43a and 44; Figure 7) down stream from Motoda's master fixed orifice (inherent, all piping have "orifice"; see Footnote 1; Compare with Applicant's Figure 19), as claimed by claim 18

Ohmi teaches a zone selection device ("monoblock valves" inside dotted lines; Figure 4; column 10; lines 16-30) for a gas delivery apparatus (Figure 1).

It would have been obvious to one of ordinary skill in that art at the time the invention was made for Motoda and Shinozuka to add Ohmi's zone selection device to Motoda and Shinozuka's apparatus.

Motivation for Motoda and Shinozuka to add Ohmi's zone selection device to Motoda and Shinozuka's apparatus is for minimizing "dead zones" as taught by Shinozuka's "monoblock valves" (column 9, lines 5-10).

Response to Arguments

8. Applicant's arguments filed December 23, 2008 have been fully considered but they are not persuasive.

9. Applicant's arguments are centered on fixing the breadth of Applicant's claimed "flat plate fixed orifice". Such a structure is disclosed by Applicant's as "fixed plate 1908" [0087], Figure 19. The October 28, 2008 BPAI decision critically disects Applicant's claimed feature along with what the Examiner believes was (and remains) the prior art equivalence – See last paragraph Page 3+. The decision notes that Applicant's specification is devoid any "special definition" that would guide the person of ordinary skill in the art to any other consideration beyond that of Applicant's "fixed plate 1908" [0087], Figure 19. The Examiner emphasizes the necesity of according a standard English definition absent any specification teaching otherwise. See MPEP 2106:

"

[*Where an explicit definition*] is provided by the applicant for a term, that definition will control interpretation of the term as it is used in the claim. Toro Co. v. White Consolidated Industries Inc., 199 F.3d 1295, 1301, 53 USPQ2d 1065, 1069 (Fed. Cir. 1999) (meaning of words used in a claim is not construed in a "lexicographic vacuum, but in the context of the specification and drawings."). Any special meaning assigned to a term "must be sufficiently clear in the specification that any departure from common usage would be so understood by a person of experience in the field of the invention.” Multiform Desiccants Inc. v. Medzam Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998). See also MPEP § 2111.01.

“

Applicant pursues the interpritation of Applicant's flat plate *fixed* orifice as suggesting a permanency. See page 7. In response, the Examiner has demonstrated that the prior art iris valve is permanently fixed *when not operated.* As such the Examiner believes he's demonstrated the capacity of the prior art to function as per the presently claimed invention was described above.

Applicant states:

"

First of all, such a hypothetical combination would result in there being two movable valves in the same leg (e.g., a master leg valve and the iris valve). Both of these valves would be performing the exact same function (growing or shrinking to allow or restrict air flow through the master leg valve). It would make no sense to have multiple components performing the same exact function, especially, as will be described, movable valves such as the iris valve introduce impurities and errors into the apparatus.

"

The Examiner disagrees. The Examiner believes that there is nothing contradictory to having "two movable valves in the same leg (e.g., a master leg valve and the iris valve)". Such piping arrangements abound based on desired flow paths for plural sources and the like. Further, such redundancy is at least beneficial for elliminating or reducing process down time *when* a particular valve fails. This is common practice in the chemical and semiconductor industry.

Applicant states:

"

Second of all, the iris valve has several features that would introduce an unacceptable amount of error into the apparatus of Motoda. Specifically, the movable plates of the iris valve rub against each other, introducing particle contaminants that would damage the wafer substrate surface in a wafer dry etch process of small feature sizes. Similarly, an iris valve does not have a perfectly round aperture owing to the fact that the "plate" is actually several plates that have the ability to move to make the aperture larger or smaller, and also does not have a constant thickness at its aperture. Both of these aspects make the gas flow through the valve unpredictable, much different than a flat plate fixed orifice. Similarly, the movable nature of the iris valve introduces repeatability error, even at a particular same set point opening size. Independent claim 18 contains limitations similar to that as described above with respect to claim 1, and as such Applicant respectfully submits that this claim is in condition for allowance for the same reasons as claim 1

“

In response, the Examiner notes that the unacceptable “particle contaminants” is a function of the *material used* for the iris valve. A person of ordinary skill in the art at the time the invention was made would choose a material that is consistent with the particual processing. For example, an iris valve with silicon blades in semiconductor manufacturing. Further more, Applicant’s cited differences between an iris valve's flow performance versus Applicant’s “fixed orifice” is not convincing. Such flow performance is well known in the fluid dynamics art to be functions of *many* variables, including laminar/turbulent flow and fluid density. In the Examiner’s opinion, an iris valve is an aggregate analog to Applicant’s “fixed plate” with similar (non-patentable), if not identical, fluid flow characteristics.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Rudy Zervigon whose telephone number is (571) 272-1442. The examiner can normally be reached on a Monday through Thursday schedule from 8am through 7pm. The official fax phone number for the 1763 art unit is (571) 273-8300. Any Inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Chemical and Materials Engineering art unit receptionist at (571) 272-1700. If the examiner can not be reached please contact the examiner's supervisor, Parviz Hassanzadeh, at (571) 272-1435.

/Rudy Zervigon/

Primary Examiner, Art Unit 1792